Claims

1. A method for setting the system parameters of a preferably confocal laser scanning microscope, setting of the system parameters being accomplished by way of a control computer, characterized by an interactive user interface, such that upon input of at least one specimen parameter and/or at least one optionally selectable system parameter, settings for the other system parameters are proposed and/or the other system parameters are set automatically.

2. The method as defined in Claim 1, wherein upon input of at least one specimen parameter and/or of at least one optionally selectable system parameter and/or of at least one definable problem regarding image acquisition and/or regarding the specimen that is to be imaged, optimization paths for system setting and/or imaging strategies are proposed.

3. The method as defined in Claim 2, wherein the system parameters of a selected system setting or imaging strategy are set automatically.

4. The method as defined in one of Claims 1 through 3, wherein the specimen dimension to be imaged is entered or selected interactively.

5. The method as defined in one of Claims 1 through 4, wherein the specimen region to be imaged is entered or selected interactively.

6. The method as defined in one of Claims 1 through 5, wherein the number of optical steps is entered or selected interactively.

7. The method as defined in one of Claims 1 through 6, wherein the specimen property to be imaged is entered or selected interactively.

8. The method as defined in one of Claims 1 through 7, wherein the detection method is entered or selected interactively.

9. The method as defined in Claim 8, wherein the detection method involves the use of the fluorescence method.

10. The method as defined in Claim 8, wherein the detection method involves the use of the reflection method.

11. The method as defined in one of Claims 1 through 10, wherein the use of a suitable objective having the highest possible numerical aperture to achieve maximum resolution is proposed interactively.

12. The method as defined in Claim 11, wherein the maximum resolution achievable with the selected objective is reported interactively.

13. The method as defined in Claim 11 or 12, wherein the present resolution on the basis of selected or ascertained, and optionally previously set, system parameters is reported interactively.

14. The method as defined in one of Claims 1 through 13, wherein the number of pixels per image plane is proposed interactively.

15. The method as defined in one of Claims 1 through 14, wherein the specimen property to be entered or selected interactively serves to determine the optimum irradiation intensity.

16. The method as defined in Claim 15, wherein the optimum irradiation intensity or laser output is proposed interactively.

17. The method as defined in Claim 15, wherein the optimum irradiation intensity or laser output is set automatically.

18. The method as defined in one of Claims 1 through 17, wherein for setting the detection pinhole diameter, an optimized value at which the image

acquisition resolution is maximal, while the image acquisition signal-to-noise ratio is still usable, is proposed interactively.

19. The method as defined in one of Claims 1 through 17, wherein for setting the detection pinhole diameter, an optimized value at which the image acquisition signal-to-noise ratio is maximal, while the image acquisition resolution is still usable, is proposed interactively.

20. The method as defined in one of Claims 1 through 19, wherein upon definition or modification of at least one system parameter, all those system parameters that are influenced by the definition or modification are reported interactively.

21. The method as defined in Claim 20, wherein by means of the interactive user interface, a report is given as to how, on the basis of the definition or modification of a system parameter, an image acquisition can be performed with the best possible quality.

22. The method as defined in one of Claims 1 through 21, wherein at least one criterion that is important for imaging or for application can be defined for the optimization thereof; and that based on this definition, the further system parameters are interactively proposed and/or automatically set.

23. The method as defined in Claim 22, wherein the predefined criterion is the signal-to-noise ratio that is to be achieved.

24. The method as defined in one of Claims 1 through 23, wherein assistance or solutions for predefined problem situations are offered by the interactive user interface.

25. The method as defined in Claim 24, wherein the problem situations are the following problems:

- "the specimen (in the case of fluorescence specimens) bleaches excessively"; and/or
- "the image data are noisy"; and/or
- "the measurement time is too long"; and/or
- "the resolution is too low."

26. The method as defined in Claim 24 or 25, wherein optimization can be performed interactively on the basis of the assistance.

27. The method as defined in one of Claims 1 through 26, wherein the at least partially mutually dependent system parameters are determined by means of an algorithm.

28. The method as defined in one of Claims 1 through 27, wherein the system parameters are proposed interactively in consideration of mutually exclusive properties or settings, and are set after selection or automatically.

29. The method as defined in one of Claims 1 through 29 **[sic]**, wherein the system parameters are retrieved, in consideration of the definitions, from an expert system stored in a database.

30. The method as defined in one of Claims 1 through 29, wherein the system parameters are ascertained, in consideration of the definitions, using fuzzy logic, and are set after selection or automatically.

31. The method as defined in one of Claims 1 through 30, wherein upon definition and/or modification of at least one system parameter, a report is interactively given that - and, if affirmed, to what extent - image acquisition will be influenced in terms of an image acquisition property, for example in terms of resolution, sampling, etc.

32. The method as defined in one of Claims 1 through 31, wherein there is conveyed to the user, before, during, and after image acquisition, a datum regarding the image acquisition quality that is to be obtained.

33. The method as defined in one of Claims 1 through 32, wherein a teaching program interfacing interactively with the user, for optimal - preferably specimen-specific and/or problem-specific - system setting and/or imaging strategy, can be activated.